



# Capital Improvement Program Monthly Status Report for September 2015

November 5, 2015

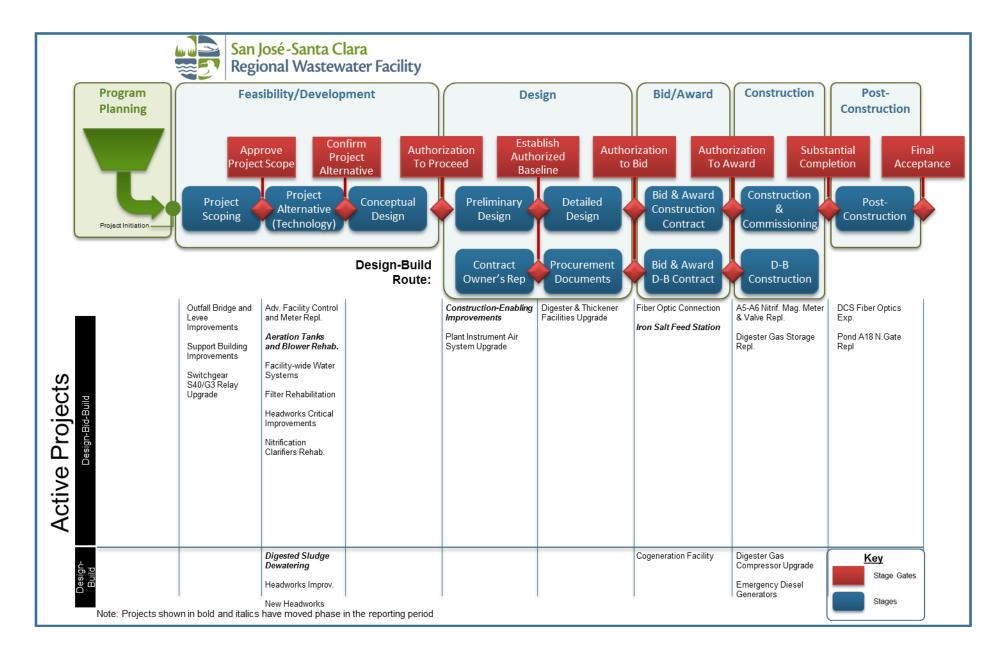
This report provides a summary of the progress and accomplishments of the Capital Improvement Program (CIP) for the San José-Santa Clara Regional Wastewater Facility (Wastewater Facility or RWF) for the period of September 2015.

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# **Project Delivery Model**





# **Program Summary**

# September 2015

In September, the CIP progressed on multiple fronts, including the successful advancement of programmatic studies and projects through stage gates of the Project Delivery Model (PDM) process. The four projects that advanced through stage gates were the Iron Salt Feed Station Project (Authorization To Bid); Construction-Enabling Improvements Project (Authorization To Proceed); Digested Sludge Dewatering Facility and the Aeration Tanks and Blower Rehabilitation Projects (both Approve Project Scoping).

The CIP also met a number of key procurement milestones. Staff advertised a Request for Qualifications (RFQ) for the Nitrification Clarifiers Rehabilitation Project. This project will address the necessary mechanical, structural, and electrical repairs and upgrades required to maintain operational performance of the existing 16 nitrification clarifiers at the RWF for decades to come. Staff also issued a Contractor Prequalification Document for the Digester and Thickener Facilities Upgrade project, and advertised the Iron Salt Feed Station Project for bidding.

Staff received two design-build proposals for the Cogeneration Facility Project and began evaluating the documents. A contract award is scheduled for March 2016. Technical evaluations for the Facility Wide Water Project were completed this month and staff will be making recommendations for consultant selection shortly. Negotiations with the selected consultants for the Headworks and Filter Rehabilitation projects were completed this month and staff will advance recommendations to the Treatment Plant Advisory Committee (TPAC) and City Council (Council) for consultant awards for these projects in November and December respectively. Staff received proposals for the Design and Construction Management Software (DCMS) procurement and began technical evaluations this month. Demonstrations of the shortlisted vendor software packages are planned for October.

The 50 percent design milestone was reached this month for the Plant Instrument Air System Upgrade Project and review of the design submission commenced. Work also continued to finalize outstanding design issues for the Digester and Thickener Facilities Upgrade Project this month and the 90% design submission is forecast for early October. Contractor pregualification documents and State Revolving Fund (SRF) documents for this project were finalized this month.

In addition, construction work continued at the RWF for a number of CIP projects including the Emergency Diesel Generators, Digester Gas Compressor Upgrade and Digester Gas Storage Replacement. The Handrail Replacement - Phase V Project was accepted this month.

#### **Look Ahead**

In October, staff will continue to move forward on numerous efforts related to consultant and design-build procurements for CIP projects including the Cogeneration Facility; Headworks Improvements; New Headworks; Facility Wide Water Systems Improvement; Filter Rehabilitation; Nitrification Clarifiers Rehabilitation; and Advanced Facility Control and Meter Replacement.

Procurements for a number of programmatic services are also expected to advance, including for General Engineering Services; DCMS; Value Engineering and Peer Review Services; System Integration Services; Construction Management Services; and Audit Services. RFQ documents will be issued for the Advanced Facility Control and Meter Replacement Project.

Three projects will seek to advance through stage gates in October. They include the Construction-Enabling Improvements Project; the Plant Instrument Air System Upgrade Project (both Establish Authorized Baseline); and the Architectural Guidelines Programmatic Study (Final Acceptance).

Staff will present recommendations from the Odor and Corrosion Strategy study to the Transportation and Environmental Committee (T&E), TPAC and Council in October. The study's three main elements are: validation of the odor goal assumed in the Plant Master Plan (PMP); establishing an odor fence line at which the adopted odor goal is to be met; and development of an Odor Implementation Plan (OIP) to meet adopted odor goals.

Also in October, the Digester and Thickener Facilities projects will reach the 90 percent design milestone, and contractor prequalification shortlists will be finalized. Formal project management training for all CIP project managers and project engineers will continue, with sessions on project budgeting, estimating, monitoring, control, and reporting.

The third annual Vendor Open House will take place at the RWF November 4. Previous CIP open house events were held in 2012 and 2014.



# Program Highlight - Design Guidelines

To assist in the delivery of the CIP, the Program Team is hiring third-party design consultants to bring supplementary resources and expertise to CIP projects. During project design, program design standards will be used to promote consistency in the application of construction materials, process equipment, piping systems, and control systems. These design guidelines will incorporate existing City standards and guidelines for new processes and buildings, and will continue the use of systems and materials that have proved to be effective at the RWF. The guidelines will also create standard formats for how information is to be presented. Figure 1 below shows the structure of the Design Guidelines Library.

Over the years, many RWF projects have been designed by different engineering firms, resulting in a variety of different piping, valving, control, and equipment selections. The current design guidelines will focus on those systems that have been the most successful, decreasing the variety and variability of systems at the RWF. Each third-party design firm will continue to apply professional engineering judgment in developing designs while adhering to the design guidelines. When a situation arises where the guidelines are not appropriate, sound engineering judgment and the best interests of the RWF will be used to arrive at a decision.

As new designs are prepared and options consolidated, it is critical to continue to engage Operations and Maintenance (O&M) staff in the process. O&M participation in project development planning and design has been extensive and at a level not often seen in similar capital programs at public works agencies. Integrating experienced engineering design skills with O&M's practical experience and RWF knowledge quickly drives project details to functional and effective solutions. In addition, O&M staff more rapidly develops a detailed understanding of each RWF treatment system's capabilities.

Another key element in the design guideline structure is the change process. Suggested improvements may be offered up for consideration by any design team member. These suggested changes are evaluated by CIP Engineering Manager and implemented for the benefit of subsequent projects.

The City's standard contracting specifications have been adapted into an industry standard format. These documents incorporate state and federal funding requirements. General technical specifications have been standardized for all projects and are available to all project managers, making the preparation, bidding and construction use of these documents more consistent and more efficient.

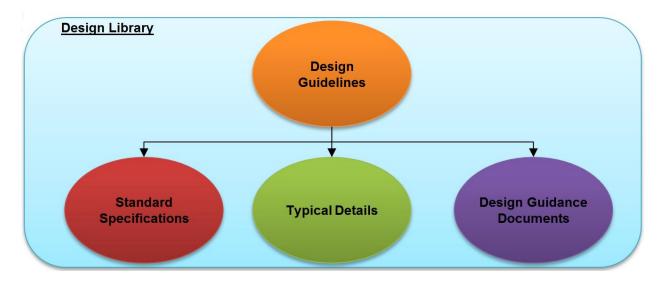


Figure 1—Structure of the Design Guidelines Library



# **Program Performance Summary**

Eight key performance indicators (KPIs) have been established to measure the overall success of the CIP. Each KPI represents a metric which will be monitored on a regular frequency. Through the life of the CIP, KPIs will be selected and measured which best reflect the current maturity of the program. An additional KPI has been added for FY15-16 to measure project stage gate compliance.

# Program Key Performance Indicators – Fiscal Year 2015-2016

	_	Year to Date			Fiscal Year End		
KPI	Target	Actual	Status	Trend	Forecast	Status	Trend
Stage Gates 80%	80%	100%			100%		
	00 76	(6/6) <sup>1</sup>			(28/28)		
Measurement: Percentage of initiated projects and studies that successfully pass each stage gate.  Criteria: Red: < 70%; Amber: 70% to 80%; Green: >=80%							
Schedule	85%	50%			25%		
	00,0	$(1/2)^2$			(1/4) <sup>3</sup>		
Measurement: Percentage Criteria: Red: < 75%; Ambe			nonths of ap	proved baselin	e Beneficial Use M	lilestone.	
Budget	90%	100%			83%		
Zuugut	0070	$(3/3)^4$			(5/6) <sup>5</sup>		
Measurement: Percentage Criteria: Red: < 80%; Ambe			within the ap	oproved baselin	ne budget.		
Expenditure <sup>6</sup>	\$154M	69M			\$191M <sup>7</sup>		
Measurement: CIP Fiscal Y = \$154M	ear 15/16 commi	tted costs. Comm	itted cost me	eets or exceeds	s 70% of planned E	Budget (70%	of \$220M
Procurement	Procurement 80%	100%			100%		
1 Todaromone		(5/5) <sup>8</sup>			(17/17)		
Measurement: Number of consultant and contractor procurements for initiated projects and program-wide services advertised compared to planned for the fiscal year. Criteria: Red: < 70%; Amber: 70% to 79%; Green: >=80%							
Safety	0	0		-	0		<b></b>
Measurement: Number of OSHA reportable incidents associated with CIP construction for the fiscal year.  Criteria: Red: > 2; Amber: 1 to 2; Green: zero incidents							
Environmental	0	0		<b>→</b>	0		<b></b>
Measurement: Number of permit violations caused by CIP construction for the fiscal year.  Criteria: Red: > 2; Amber: 1 to 2; Green: zero incidents							
Staffing <sup>9</sup>	80%	100%			86%		
		(1/0)			(25/29)		
Measurement: Number of planned positions filled for the fiscal year.  Criteria: Red: < 70%; Amber: 70% to 79%; Green: >=80%							
2 2 2 2 2 2 2 3 2 3 2 3 2 3 2 3 2 3 2 3							

#### **Notes**

- 1. For the Stage Gate KPI Year to Date (YTD), the number of completed stage gates increased from two to six. The following projects successful completed their stage gates in September Aerations Tanks and Blower Rehabilitation, Construction-Enabling Improvements, Digested Sludge Dewatering and Iron Salt Feed Station.
- For the Schedule KPI YTD, the total of completed projects being measured decreased from three to two and the number of completed projects decreased from two to one compared to last month due to the exclusion of the Pond A18 Northern Gate Replacement Project as the project did not follow the standard PDM process due to the emergency nature of the project.
- For the Schedule KPI Fiscal Year End (FYE), the total forecasted number of FYE completed projects being measured decreased from five to four and the number of forecast completed projects decreased from two to one compared to last month due to the exclusion of the Pond A18 Northern Gate Replacement Project as the project did not follow the standard PDM process due to the emergency nature of the project.
- 4. For the Budget KPI YTD, three out of three projects were completed within the approved baseline budget. These three projects are Fire Main replacement Phase III project, which was accepted in July 2015, Training Trailer Replacement project, which was accepted in August 2015 and the Handrail Replacement project, which was accepted in September 2015.
- 5. For the Budget KPI FYE, the forecasted number of completed projects within the approved baseline budget decreased from six to five. The count decreased compared to last month due to the exclusion of the Pond A18 Northern Gate Replacement Project as it did not follow the standard PDM process due to the emergency nature of the project.
- 6. The FY15-16 budget excludes reserves, ending fund balance, South Bay Water Recycling, Public Art and Urgent and Unscheduled Rehab.items.
- 7. The FYE Forecast Expenditure value has been updated following finalization of anticipated expenses and encumbrances.
- 8. For the Procurement KPI Year to Date, the number of procurements increased from three to five. Construction contracts for the Iron Salt Feed Station Project and for the Nitrification Clarifiers Rehabilitation Project were advertised in September 2015.
- The City Staffing level KPI for planned recruitments for positions that are vacant at the start of the fiscal year, KPI measured quarterly; all other KPIs measured are monthly. KPI measurement does not account for staff turn-over throughout the fiscal year.

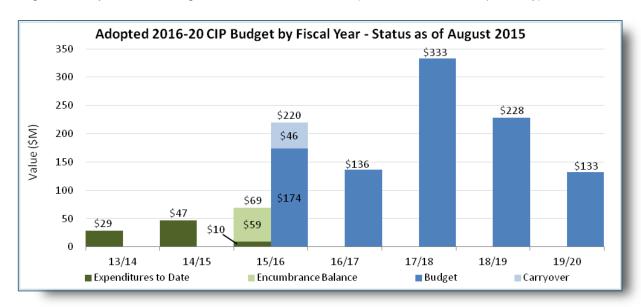


# **Program Cost Performance**

This section provides a summary of CIP cost performance for all construction projects and non-construction activities for FY15-16 and the 2016-2020 CIP.

# Adopted 2016-2020 CIP Expenditure and Encumbrances

To accommodate the proposed increase in expenditures and encumbrances over the next five years, the City is implementing a long-term financial strategy to fund the needed, major capital improvements while minimizing the impact to ratepayers. FY 13-14 and FY14-5 expenditures have been adjusted to reflect the CIP portion of the 512 funding, excluding South Bay Water and Urgent and Unscheduled Cost (\$2.6M and \$1.5M respectively).



#### **Notes**

<u>Expenditure:</u> Actual cost expended, either by check to a vendor or through the City's Financial System for expense such as Payroll or non-personal expenses that do not require a contract.

<u>Encumbrance</u>: Financial commitments, such as purchase orders or contracts, which are committed to a vendor, consultant, or contractor. The encumbrance reserves the funding within the appropriation and project.

Encumbrance Balance: The amount of the remaining encumbrance committed after payments.

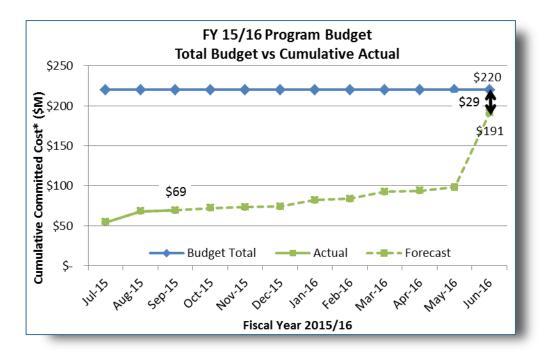
Budget: Adopted FY 2016-2020 Budget. This is new funding plus rebudgeted funds.

<u>Carryover</u>: Encumbrance Balances at the end of a FY become Carryover Funding. This is different from rebudgets, in that this is done automatically in order to utilize the funding previously committed, but not yet paid.



# Fiscal Year 2015-2016 Program Budget Performance

The fiscal year program budget is \$220 million. The budget amount of \$220 million represents the 2015-2016 budget of \$174 million plus carryover of \$46 million. The budget amount excludes Reserves, Ending Fund Balance, South Bay Water Recycling, Public Art, and Urgent and Unscheduled Rehabilitation items.



<sup>\*</sup>Committed costs are expenditures and encumbrance balances, including carryover (encumbrance balances from the previous fiscal year).



# **Project Performance**

There are currently six active projects in the construction or post-construction phase with a further 18 projects in feasibility/development, design or bid and award phases (see PDM graphic at the front of this report). All active projects are listed in the tables below. Projects in the construction phase have cost and schedule baselines established and are monitored using the City's Capital Project Management System (CPMS). These projects have green/red icons included in the table below to indicate whether they are on budget and schedule using the CPMS data as a source.

# **Project Performance – Baselined Projects**

Project Name	Phase	Estimated Beneficial Use Date <sup>1</sup>	Cost Performance	Schedule Performance
Distributed Control System (DCS) Fiber Optics Network Expansion	Post-Construction	May 2014 <sup>3</sup>		
Pond A18 Northern Gate Structure	Post-Construction	Aug 2015 <sup>3</sup>	N/A <sup>4</sup>	N/A <sup>4</sup>
Digester Gas Storage Replacement	Construction	Nov 2015		•
A5-A6 Nitrification Mag. Meter & Valve Replacement	Construction	Mar 2016	•	•
Emergency Diesel Generators	Construction	Aug 2016		
Digester Gas Compressor Upgrade	Construction	Sep 2016		•

#### KEY:

Cost:	On Budget	>1% Over Budget
Schedule:	On Schedule	>2 months delay

# **Notes**

- 1. Beneficial Use is defined as when the work is sufficiently complete, in accordance with the contract documents, so that the City can occupy or use the work. Beneficial use dates are being reviewed as part of project schedule reviews.
- 2. An explanation of cost and schedule variances on specific projects identified in this table is provided on page 12.
- 3. Actual Beneficial Use Date
- 4. Due to the emergency nature of the Pond A18 Northern Gate Replacement project, cost and schedule performance measurement criteria have not been applied.

# **Project Performance – Pre-Baselined Projects**

Project Name	Phase	Estimated Beneficial Use Date <sup>1</sup>
Fiber Optic Connection	Bid & Award	Jul 2016
Iron Salt Feed Station	Bid & Award	Mar 2017
Cogeneration Facility	Procurement	Mar 2019
Plant Instrument Air System Upgrade	Design	Jan 2018
Digester & Thickener Facilities Upgrade	Design	Mar 2019
Construction-Enabling Improvements	Feasibility/Development	Oct 2016
Headworks Critical Improvements	Feasibility/Development	Apr 2017
Switchgear S40/G3 Relay Upgrade	Feasibility/Development	Oct 2019
Adv. Facility Control & Meter Replacement	Feasibility/Development	May 2020
Headworks Improvements	Feasibility/Development	Mar 2021
Outfall Bridge and Levee Improvements	Feasibility/Development	Jun 2021
Facility-wide Water Systems Improvements	Feasibility/Development	Sep 2021
Digested Sludge Dewatering Facility	Feasibility/Development	Dec 2021
Filter Rehabilitation	Feasibility/Development	Jan 2022
New Headworks	Feasibility/Development	Jun 2022
Nitrification Clarifiers Rehabilitation	Feasibility/Development	Aug 2022
Aeration Tanks and Blower Rehabilitation	Feasibility/Development	Nov 2023
Support Building Improvements	Feasibility/Development	Jan 2027

#### **Notes**

<sup>1.</sup> Beneficial Use is defined as when the work is sufficiently complete, in accordance with the contract documents, so that the City can occupy or use the work. Beneficial use dates are being reviewed as part of project schedule reviews.

# **Significant Accomplishments**

The projects below are described under different "packages." In the CIP, packages are groups of projects organized within the same treatment process area.

## **Biosolids Package**

## Digester and Thickener Facilities Upgrade

The detailed design continued this month. The design consultant is currently preparing the 90 percent completion level design documents. Design highlights include:

- A commissioning and startup workshop was held with O&M Staff in order to review actual digester and dissolved air flotation tank startup procedures and performance requirements.
- The project team continued with the pre-qualification process for pre-selection of qualified construction contractors for the Project. The prequalification RFQ was advertised this month. A pre-qualification plant walkthrough for contractors was held September 22.
- The SRF documents were finalized this month and submitted to the state for review.

## Digester Gas Storage Replacement

Work continued on the digester gas storage tank, with leak testing performed. Results indicated successful completion of the test and were approved. The contractor is currently working to address outstanding construction items and has ordered parts for upgrading the davit crane system. The contractor is also preparing a startup and commissioning plan.

# **Facilities Package**

## Cogeneration Facility

Design-build proposals were received from the two shortlisted firms on September 8. Staff is evaluating and ranking the proposals. Formal interviews are scheduled for early October.

# Facility-wide Water System Improvements

The City received SOQs from two firms. Evaluations and interviews were conducted in September, and rankings have been posted. Staff began discussions with the top-ranked firm and expect to recommend award of an agreement to TPAC and Council in December.

## **Liquids Package**

# Filter Rehabilitation

Negotiations with the selected consultant were completed in September. Staff anticipates that the agreement will be recommended to TPAC and the Council for award in December.

#### Headworks Improvements and New Headworks

Negotiations with the selected consultant were completed in September. Staff anticipates that the agreement will be recommended to TPAC and the Council for award in December.

#### Iron Salt Feed Station

Staff received stage gate approval and authorization to bid on September 10. The project consists of an iron salt feed station that delivers ferric chloride to the headworks to lower hydrogen sulfide levels in digester gas, and a polymer feed station that delivers polymer to the East Primary Junction Box to increase solids removal in the primary clarifiers. Staff advertised the project for bidding September 23.

# Aeration Tanks and Blower Rehabilitation

Staff held the final Blower Evaluation Technical Memorandum Workshop on September 10, the stage gate for approval of scope September 24, and obtained conditional approval. The stage gate recommendation was to procure a single design consultant but require two designs. The first project would be the Blower Rehabilitation Project, which needs to be accelerated so that it is operational at the same time the Cogeneration Project is commissioned. The second project would be the Aeration Tank Rehabilitation project.



#### Nitrification Clarifiers Rehabilitation

Staff completed the RFQ and scope of work for the project. The project includes the replacement of 16 clarifier sludge and scum collector mechanisms and other related miscellaneous improvements. The RFQ was advertised September 28.

# Advanced Facility Control and Meter Replacement

Staff completed the RFQ and scope of work for the project and anticipates advertising the RFQ in October. The project includes replacement of over 300 meters and control devices throughout the treatment plant. Staff also developed a final isolation strategy memo for internal review September 28 which helped define a potential construction sequencing and project phasing approach to coordinate with ongoing O&M projects.

# **Power and Energy**

# <u>Digester Gas Compressor Upgrade</u>

The underground conduits and piping in the cooling tower and chiller area have been installed. The forms for the new Compressor Building roof are being installed. All equipment and material for the project have been approved and ordered. The Construction is 34 percent complete.

## Plant Instrument Air System Upgrade

The consultant has submitted the 50 percent detail design for the City's review. The consultant also conducted a workshop for the 50 percent detail drawing review. The project will seek to advance through the Stage Gate 4 (Establish Baseline) in October and is forecasted to complete 90 percent detailed design by February 2016.

## **Programmatic Studies**

## Odor and Corrosion Control Study

Staff completed the Odor Control Implementation Plan memorandum to be presented at the TPAC meeting in October.

#### Automation Master Plan and Process Control Approach

Staff completed the draft final of Governance of Automation Guidelines; Distributed Control System Guidelines; Network and Communication Guidelines; Equipment and Instrumentation Guideline; Control System Hierarch Guideline; and Cyber Security Guidelines for review. Staff held a Develop Implementation Plan Kickoff workshop on Sept 21 and a Knowledge Management Recommendation workshop on September 22.

# **Traffic Circulation and Impacts**

Staff held a workshop to discuss the Traffic Management Plan submittal in early September; CIP staff provided the consultant with comments later in the month. The study is still on schedule to be completed in November.

# Flood Protection Study

Staff completed review of two deliverables--the draft RWF Data Review and Existing Conditions Summary Report and the draft RWF Internal Stormwater Drainage System Report—and provided comments on both deliverables to the consultant. Staff received the draft Flood Protection Guidelines for Future RWF Projects. The study is still on schedule to be completed by December.



# **Explanation of Project Performance Issues**

# A5-A6 Nitrification Magnetic Meter & Valve Replacement

In September 2014, during startup, the project team discovered that the actuators that had been specified and installed were incompatible with the available power supply. Engineering staff determined it would be cost more to modify the electrical system than to order and install compatible actuators. In addition, O&M staff requested that the actuators match the custom actuators used in the other 14 clarifiers. The City pursued various options to resolve the issue and has recently requested a proposal from the contractor to install new actuators based on a revised specification. The existing funding will not likely be sufficient and the project will need Council approval for additional funds. There will be a 14-16 weeks lead time for ordering custom-built actuators. Contractor mobilization, actuator installation, wiring, troubleshooting and punch list-sign off will take a minimal of three weeks. Beneficial Use is expected by March 2016.

# **Digester Gas Compressor Upgrade**

During the course of the design portion of this design build project, it was determined that some of the equipment for this project would need to meet the explosion-proof classification of Class 1, Division 1 of the National Electric Code. This classification was more stringent than what was originally called for in the bid documents. Cost and schedule impacts were received from contractor, Anderson Pacific. Council approved additional project funding and a three month time extension due to motor upgrade during its June 16, 2015 session. Beneficial Use is expected by September 2016.

# **Digester Gas Storage Replacement**

During a comprehensive review of the gas storage tank design submittal by the design consultant, Brown and Caldwell, it was identified that the removable piston legs used in the proposed design by the sub-contractor did not meet the design standards and would have caused problems in the intended use of the tank. As a result, the sub-contractor re-designed the tank with permanent piston legs with a subsequent delay in mobilization until the re-design of the tank was reviewed and approved. The re-design was subsequently completed and has been approved. There were several leak tests performed on the gas holder to ensure gas tightness of the tank. Leakage test results have been submitted and the gas storage tank has passed the required leakage test. The contractor is expected to complete all approved work by November 10. The phased introduction of gas during the commissioning process is planned to begin by November 12. The project is within budget, and Beneficial Use is expected by the end of November 2015.



# **Project Profile**

## **Pond A18 Northern Gate Structure Replacement**

# **Background**

The RWF owns Pond A18, a former salt pond located along the RWF's northwestern boundary, as shown in Figure 2. The pond is isolated from South San Francisco Bay and the adjacent RWF operations area by a levee originally constructed in the mid-1950s. At that time, tidal marsh and bay mud was dredged to form the levee, a cycle that was repeated multiple times prior to the City's acquisition of the property in 2003. Two gate structures were installed on the levee in 2004 to allow for water transfers between the bay and the pond. One structure is located in the southwest portion of the pond and the other in the northwest section. Buried beneath each structure are two 4-foot-diameter pipes with slide/flap gates at each pipe end that help control the amount of water that can flow back and forth between the two water bodies. The structures' external components were constructed with chemically pressure-treated timber, both to withstand the harsh marine environment and to allow for expected settlement and movement that occurs with bay mud materials.

Following a November 2014 condition assessment of the structures, a draft report in January 2015 indicated severe structural integrity at the northern gate structure. After subsequent field investigations revealed additional degradation, RWF staff sought Council approval to immediately move forward with urgent actions to replace the structure before a larger failure and potential levee breach could occur.

On March 3, 2015, the City Council adopted Resolution No. 77296, which declared that emergency replacement of Pond A18's northern gate structure was necessary to address critical structural failure and to avoid the potentially significant impacts of breaching the Pond A18 levee system. Staff obtained the necessary emergency permits with the US Army Corps of Engineers and Federal Fish and Wildlife Service, then worked with several contractors to obtain bids to perform the engineering and construction work to replace the damaged northern gate structure. On March 30, 2015, the Director of Public Works awarded a construction contract to Galindo Construction, Inc.

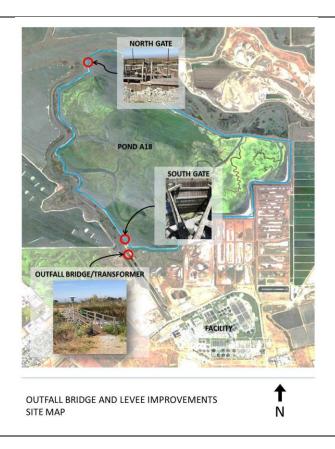




Figure 2 – Aerial Views of Northern Gate Structure



#### Construction

Constructing a project located at the edge of San Francisco Bay presents many challenges. Access to the site was limited by having to travel roughly two miles on unimproved dirt roads, making delivery of equipment and materials difficult. The slightest amount of rain or heavy dew made traveling to the site unsafe.

Mobilization began in early May 2015, following completion of contract documents. Initial construction work focused on partial demolition and staging for installation of the cofferdams that would isolate the northern gate structure from adjacent Artesian Slough and Pond A18. Once the cofferdams were in place, the contractor completed the demolition of the structure, then removed the gate valves and HDPE pipes to inspect them for damage and make necessary repairs. With the entire levee section removed, the contractor installed new timber piles, utilizing a 15-ton crane to lift them into place and drive them deeply into the bay mud material. These piles would become the main structural support for the entire structure. Once all 17 piles were installed, the remaining structural components could be constructed. Progress continued with installation of additional subsurface structural supports, pipes, valves, headwalls, and wingwalls before the levee materials were reinstalled. Next, the contractor assembled the splash pad and trash rack, installed rock slope protection to protect the structure and levee from erosive wave action, and removed the cofferdam system before completing construction of the catwalks and cleaning up the site.

During construction, water transfer from Artesian Slough to Pond A18 at the northern gate structure was prevented. disrupting the normal operations of Pond A18. RWF staff diligently monitored and managed the southern gate structure gate valves to ensure the pond remained within acceptable environmental and water quality standards. The contractor worked guickly and continuously, allowing the northern gate structure to begin routine water transfers on August 21, 2015. The structure was officially completed on August 31. Photos of the construction progress are shown in Figure 3.

Installation of Cofferdam System to Isolate Work Area



Piles and Pipes Installed, Headwall Installation Work



Completed Northern Gate

Structure

Removal of Pipes

and Levee Material





Figure 3 – Photos of Northern Gate Structure Construction



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# Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

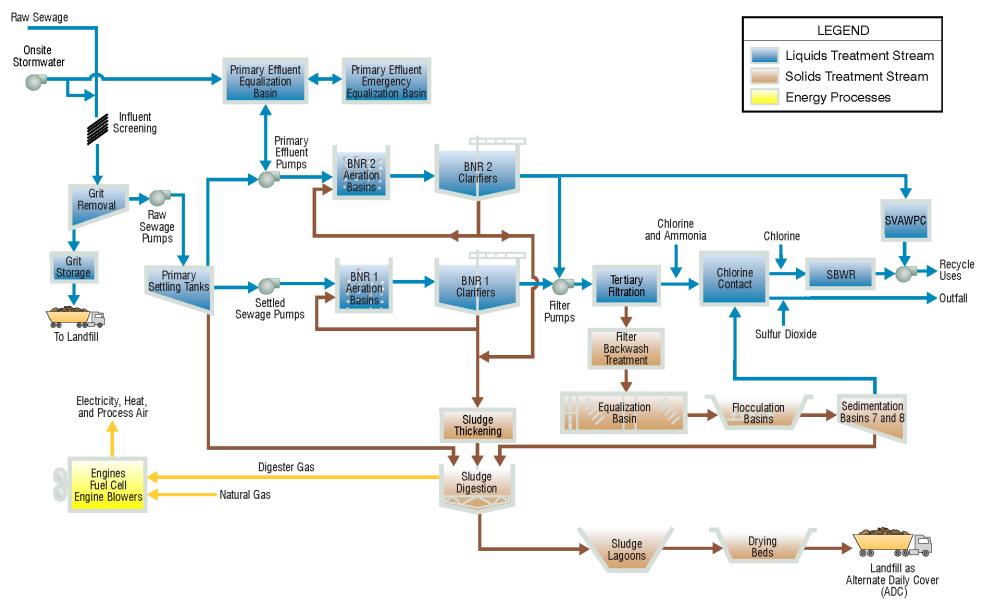


Figure 4 — Current Treatment Process Flow Diagram



# Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

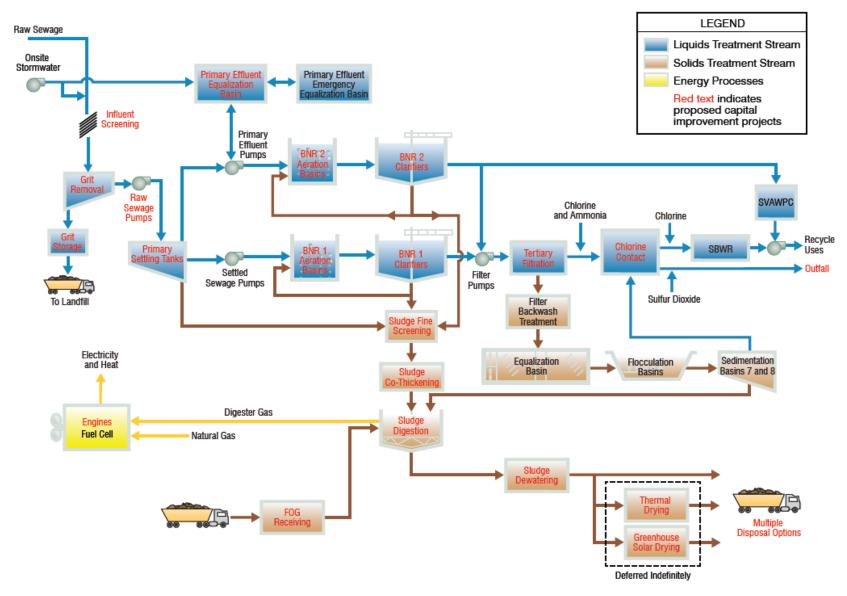


Figure 5 — Proposed Treatment Process Flow Diagram



# **Active Construction Projects – Aerial Plan**

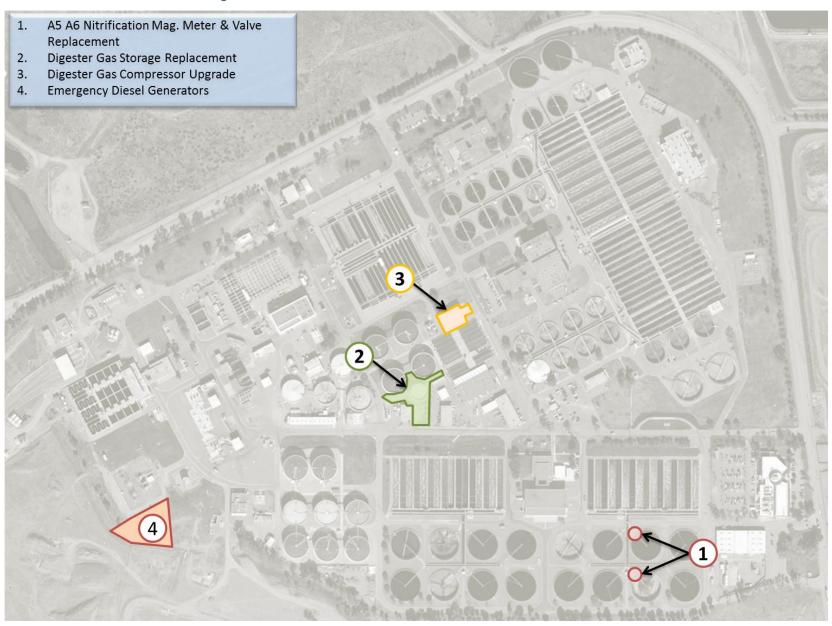


Figure 6—Active Construction Projects

